



ENERGY STAR®

Draft 2 Residential Dishwasher Version 7.0

Specification

Stakeholder Webinar
February 16, 2022



Meeting Details

- Slides and related materials will be available on the Dishwasher Product Development Web page:
 - www.energystar.gov/RevisedSpecs
 - *Follow link to “Version 7.0 is in Development” under “Dishwashers”*
- Audio provided via teleconference:
 - U.S. Phone Number: 877-423-6338**
 - International Phone Number: +1-571-281-2578**
 - Participant Code: 436598**
 - Phone lines will be muted at the start of the presentation
 - Please leave your line on mute unless speaking during the call for questions
 - Press *6 to unmute your line and when you are finished with your question or comment, *6 to mute



Introductions

Ga-Young Park

U.S. Environmental Protection Agency

Steve Leybourn

ICF



Introductions and Background

Topic
Background
Version 7.0 Draft 2 Specification <ul style="list-style-type: none">- Efficiency Levels- Cleaning Performance Threshold- Connected Criteria
Savings & Payback
Timeline and Open Discussion



Webinar Goals

- Refresh stakeholders on ENERGY STAR principles and specification development process
- Engage with stakeholders on proposals shared in the Draft 2 Specification
- Present estimated energy savings from Draft 2 proposals
- Share expected next steps and schedule





ENERGY STAR Guiding Principles

- ENERGY STAR criteria are designed to balance a varied set of objectives, including:
 - Energy and/or water savings
 - Product performance maintained or enhanced
 - Purchasers can recover investment in increased efficiency within a reasonable time period
 - Efficiency is achieved through one or more technologies that is/are accessible to more than one manufacturer
 - Energy/water consumption can be measured and verified with testing
 - Label provides meaningful differentiation
- For more information see [ENERGY STAR Products Program Strategic Vision and Guiding Principles](#)

ENERGY STAR® Products Program Strategic Vision and Guiding Principles

Strategic Vision

The ENERGY STAR product labeling program reduces greenhouse gas emissions by removing barriers in the market that deter consumers and businesses from easily identifying the financial and environmental benefits of purchasing the most energy-efficient product model that otherwise meets their needs. Historically, these barriers have included confusion about what constitutes an energy-efficient product, difficulty identifying which products are highly efficient and a lack of appreciation of the value efficient products offer. In particular, the program seeks to reduce greenhouse gas emissions using the following approach:

- Establishing a common, objective basis for defining what constitutes high efficiency for a particular product type
- Providing the market with an easy way (i.e. the ENERGY STAR label) to identify products that qualify
- Helping build and sustain demand for highly efficient products through education and outreach and by ensuring that the products deliver on consumer expectations

Program Design

The ENERGY STAR product labeling program overlays the consumer perspective as part of an ongoing process to identify and promote products that reduce greenhouse gas emissions by meeting the highest energy conservation standards. These standards (aka performance specifications) are established to recognize products that: are cost-effective from the purchaser standpoint; offer at least equivalent functionality and features as standard products; and are proven and broadly available.

As the market responds to consumer demand for ENERGY STAR qualified products in a particular category, sales of highly efficient products increase, locking in more and more energy savings and environmental benefits over the life of those units. In the process, because of technological advances and/or reduced production costs, opportunities present themselves to raise the bar over time in terms of what constitutes a highly efficient product in a given category. In conjunction with the steady progress this approach delivers, the U.S. Environmental Protection Agency (EPA) will continue to explore ways to leverage the ENERGY STAR platform to bring generational change through initiatives such as ENERGY STAR's Most Efficient and the ENERGY STAR Emerging Technology Award.

EPA uses a systematic framework built on a foundation of transparency and collaboration with a range of stakeholders to: (1) assess the feasibility of applying the ENERGY STAR label to a product category; (2) develop performance specifications that must be met in order to earn the label; and (3) reassess performance specifications as market conditions change. This process relies on rigorous market, engineering, and pollution savings analyses as well as input from other programs in EPA, industry and other stakeholders.

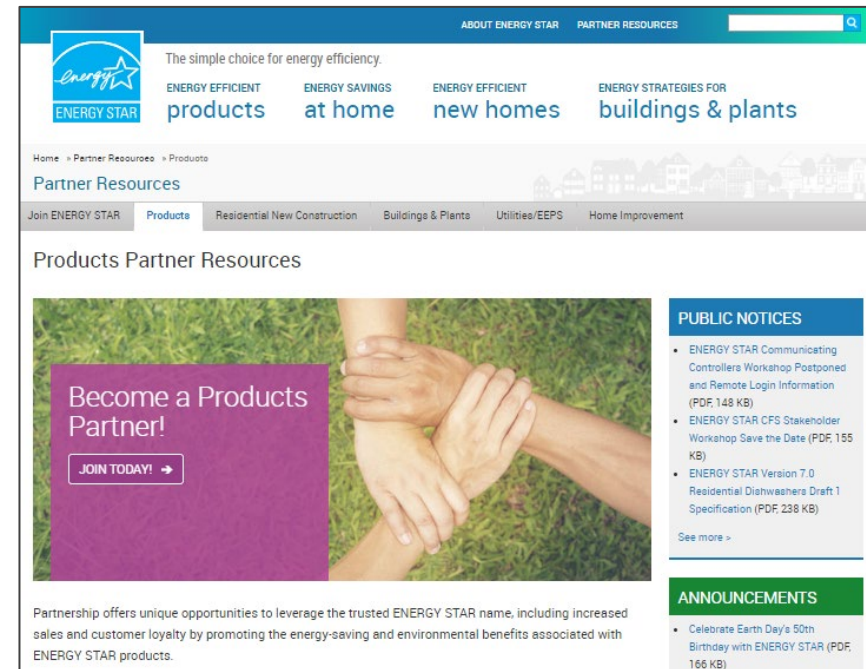
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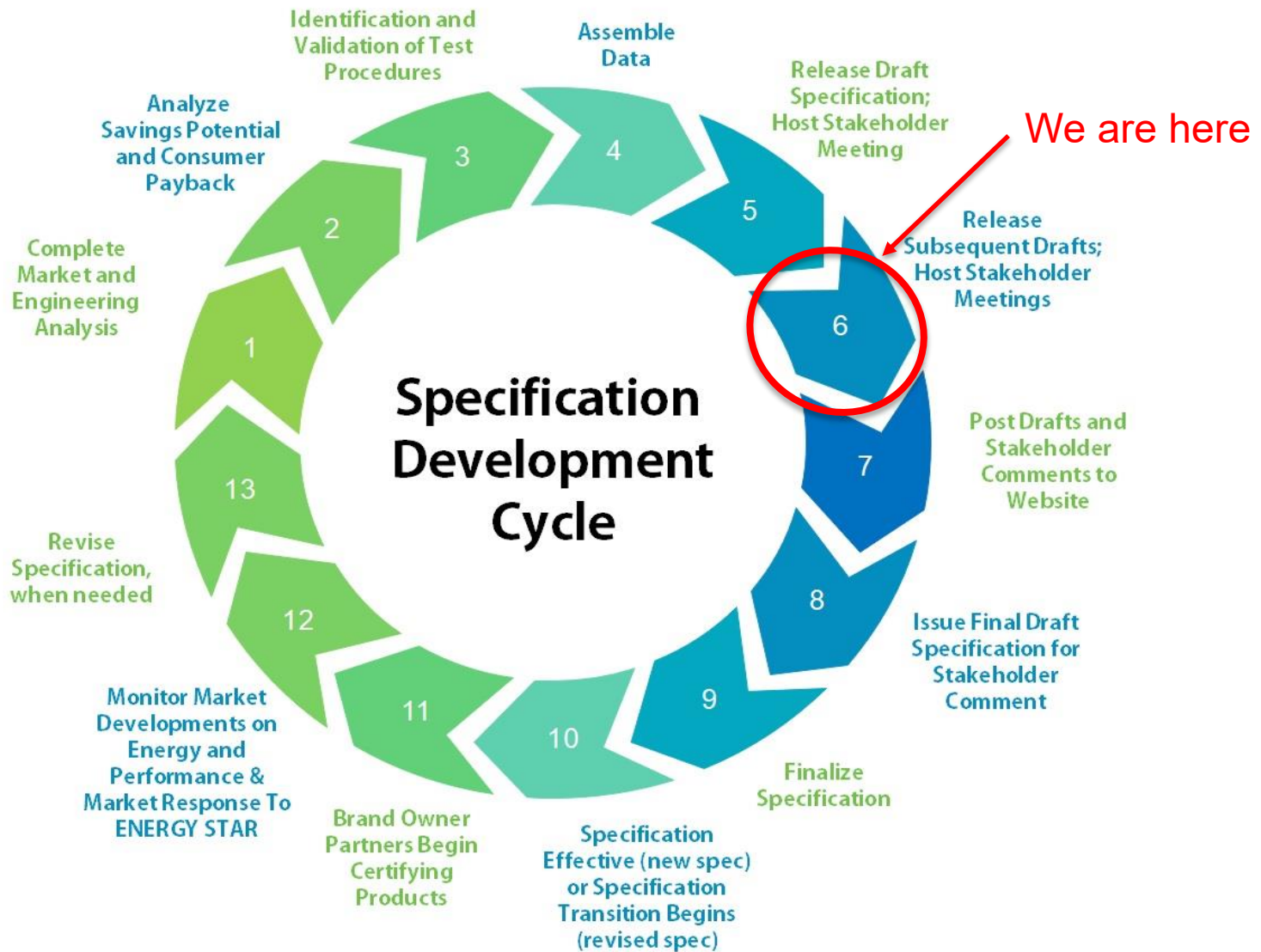


Specification Development

- ENERGY STAR follows [EPA's Standard Operating Procedure](#) through the specification development or revisions process, balancing:
 - The need to keep pace with evolution among leading products and continue to effectively differentiate for consumers
 - Production cycles, other factors important to the industry
- Key elements of the stakeholder process:
 - Consistency, transparency, inclusiveness, responsiveness, and clarity
 - Stakeholder engagement is a vital aspect to the success of the ENERGY STAR program



https://www.energystar.gov/partner_resources/products_partner_resources





Version 7.0 Specification Background and Drivers

- EPA released a Version 7.0 Draft 1 Specification on March 11, 2020
- Drivers for V7.0 Revision
 - Specifications are reviewed every 3 years
 - According to 2020 shipment numbers, ENERGY STAR market penetration was ~99%
 - Partners are requesting higher thresholds for ENERGY STAR certification to provide meaningful differentiation



Version 7.0 Draft 2 Specification

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Efficiency Levels

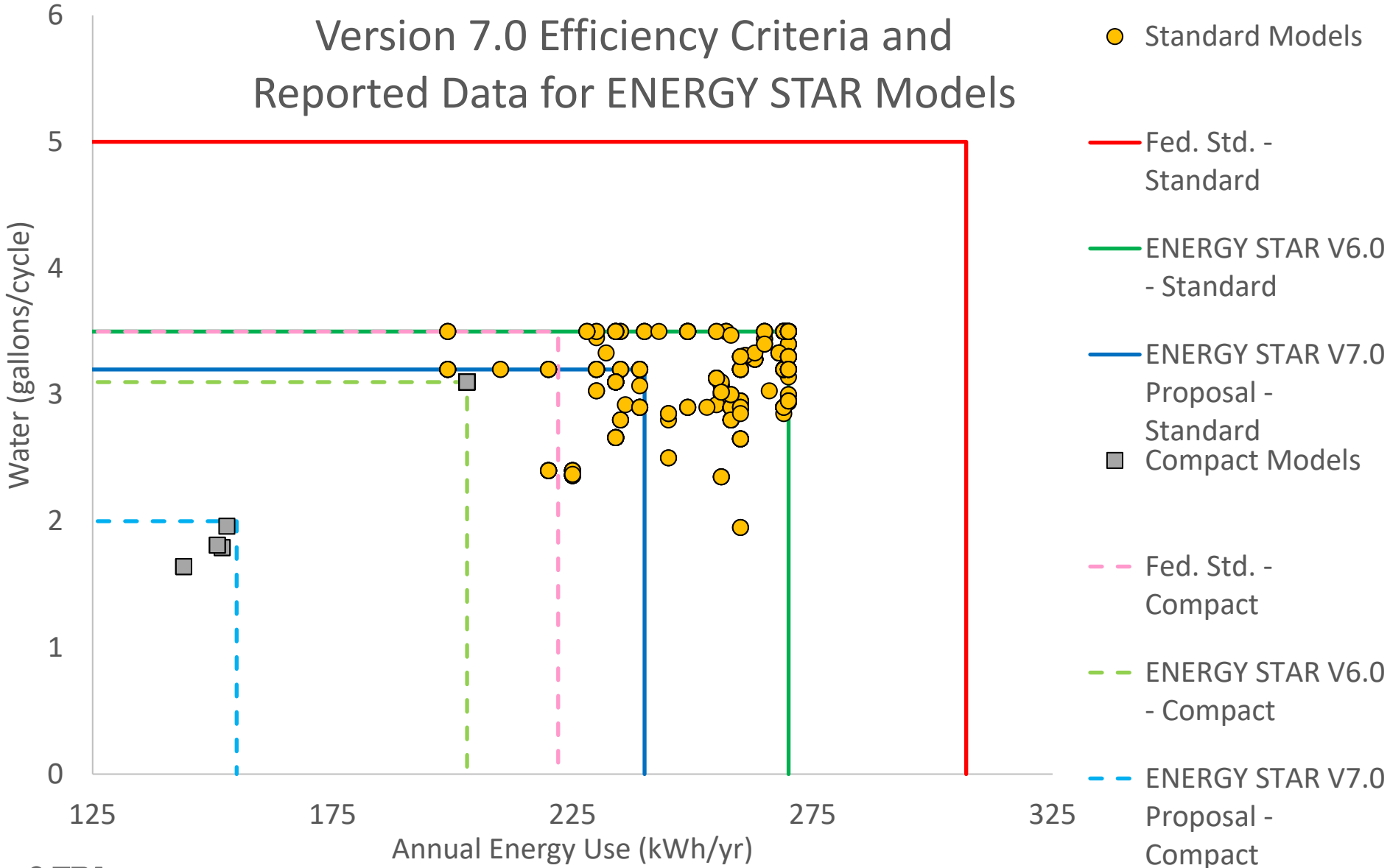
- Efficiency levels have not changed from Draft 1 to Draft 2

ENERGY STAR Draft 2 Residential Dishwasher Version 7.0 Efficiency Requirements

Key Product Criteria				
Level	Standard		Compact	
	Annual Energy Use (kWh/yr)	Water Use (gallons/cycle)	Annual Energy Use (kWh/yr)	Water Use (gallons/cycle)
Federal Standard	307	5.0	222	3.5
ENERGY STAR Version 7.0 Draft 2	240	3.2	155	2.0
<i>% Better Than Federal Standard</i>	<i>22%</i>	<i>36%</i>	<i>30%</i>	<i>43%</i>



Version 7.0 Efficiency Criteria and Reported Data for ENERGY STAR Models





Cleaning Performance

- In Draft 2, the cleaning performance requirement was moved from the Scope section to the Test Requirements section
- The cleaning performance threshold is intended to prevent trade-offs between performance and efficiency
- Reducing threshold to 65 (from 70 in Draft 1) proposed to harmonize with DOE’s proposal in current test procedure rulemaking process
- Any comments and questions on Cleaning Performance threshold and level, please submitted to: ResDishwasher2016P0012@ee.doe.gov
 - Docket #: EERE-2016-BT-TP-0012
 - RIN #: 1904-AD96
 - Comments due 2.22.22

5) Test Requirements

- A. One of the following sampling plans shall be used for certification to ENERGY STAR.
1. A representative unit shall be selected for testing based on the definition for Basic Model provided in Section 1 above; or
 2. Units shall be selected for testing per the sampling requirements as defined in Table 4:

Table 4: ENERGY STAR Sampling Requirements for Dishwashers

Product	Code of Federal Regulations Reference
Residential Dishwashers	10 CFR § 429.20, which references 10 CFR § 429.11

B. When testing energy and water consumption of residential dishwashers, the per-cycle cleaning index for the normal cycle, determined according to the Test Method specified in Table 5, must be 65 or higher for ENERGY STAR certification.

- C. The following test methods shall be used to determine ENERGY STAR certification:

Table 5: Test Methods for ENERGY STAR Certification

ENERGY STAR Requirement	Test Method Reference
Energy Consumption (kWh/year)	10 CFR 430, Subpart B, Appendix C1*
Water Consumption (gallons/cycle)	
Cleaning Index	ENERGY STAR Test Method for Determining Residential Dishwasher Cleaning Performance (Rev. Feb-2014)



Cleaning Performance

- Consumers use the normal cycle the majority of the time. As such, ENERGY STAR seeks to differentiate leadership in products meeting the cleaning performance threshold of 65 in the normal cycle

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- For the Final Draft we plan to add a note the ENERGY STAR cleaning performance test shall be used until such a time where Appendix C1 includes cleaning performance



Optional Connected Criteria

- Optional connected ENERGY STAR criteria were introduced in the Version 6.0 specification
 - Currently, ~1% of ENERGY STAR certified residential dishwasher models are connected
 - Test method to validate demand response capability has not been developed. Products may still be self-reported as Connected if the models meet the ENERGY STAR connected criteria
- EPA continues to support the connected criteria for ENERGY STAR certified dishwashers. EPA believes the consumer value of connected appliances remains and that the market will reward the best implementations
 - EPA is removing the 5% connected credit to the maximum for Annual Energy Consumption for demand response capable residential dishwashers
 - Currently no dishwashers are receiving this credit because there is no ENERGY STAR connected test method
 - Further, with diminishing returns for efficiency for dishwashers, providing a connected adder is not in the best interest of the consumer



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Residential Consumer Savings: Energy & Water Use Proposed Version 7.0 Criteria

	Annual Savings			Lifetime Savings		
	Electricity (kWh/yr)	Gas (therms/yr)	Water (gallons)	Electricity (kWh)	Gas (MMBtu)	Water (gallons)
Standard	67	0.28	387	804	3.37	4,644
Compact	67	0.26	323	804	3.13	3,870

Assumptions: (1) The baseline used to calculate savings was the DOE Standard (2) Elec. Emissions Factor = 1.559 lbs CO₂E/kWh, (3) \$0.1299/kWh, (4) Gas Emissions Factor = 116.98 lbs CO₂/MMBtu, (5) \$1.0793 \$/Therm, (6) \$0.01054 \$/gal, (7) a lifetime of 12 years for dishwashers was used, per Appliance Magazine, Portrait of the U.S. Appliance Industry 1998.



Residential Consumer Savings: Dollars & Payback

Proposed Version 7.0 Criteria

Annual Savings (Lifetime Savings)				Cost	
Electricity	Gas	Water	Total	Price Premium	Pay Back Period
\$8.35 (\$100.14)	\$2.85 (\$34.16)	\$4.08 (\$48.95)	\$15.27 (\$183.26)	\$47.74	3.9

Assumptions: Prices of \$0.1246 per kWh; \$1.0140 per therm; \$0.01054 per gallon were applied to estimate consumers' cost savings.



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Next Steps

Event	Date
<i>Draft 2 Version 7.0 Specification</i>	<i>January 6, 2022</i>
Draft 2 Version 2.0 Webinar	February 16, 2022
Draft 2 Comments Due*	February 24, 2022
Release Subsequent Drafts of Specification	Spring 2022
Publish Final Version 7.0 Specification	Q2 2022
Version 7.0 Specification Effective Date	Q1 2023



Webinar Wrap-up and Comment Deadline

- EPA appreciates the opportunity to discuss Draft 2
- Comments are due on **February 24, 2022**
- Please send all comments to:

appliances@energystar.gov

- Unless marked as confidential, all comments will be posted to the Residential Dishwasher product development page at https://www.energystar.gov/products/spec/residential_dishwasher_specification_version_7_0_pd



Open Discussion



Key Contacts

Specification Development

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Test Method

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